

compacted without displacement and shall continue until the material is thoroughly compacted and all marks have been removed.

603.03.03 Backfill. After the forms have been stripped and any necessary repairs are satisfactorily completed, the spaces in front and back of the sidewalk shall be backfilled to the required elevations using material approved by the Engineer.

603.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for all excavation, backfill, disposal of excess or unsuitable material, forms, reinforcement when specified, joints, sealer, compaction, curing, finishing, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

The removal and disposal of unsuitable material will be measured and paid for at the Contract unit price for Class 2 Excavation, which price shall include the cost of using suitable excavation as replacement material. When Borrow or Selected Backfill is authorized as replacement material, payment will be made at the Contract unit price bid for the respective items.

When the existing sidewalk is removed and replaced with a new sidewalk, the cost to remove the existing sidewalk will be incidental to the Contract unit price for sidewalk.

603.04.01 Concrete Sidewalks will be measured and paid for at the Contract unit price per square foot of finished surface including sidewalk ramps.

603.04.02 Hot Mix Asphalt Sidewalks will be measured and paid for at the Contract unit price per ton for the mixture placed.

SECTION 604 — CONCRETE TRAFFIC BARRIERS

604.01 DESCRIPTION. This work shall consist of constructing concrete traffic barriers as specified in the Contract Documents or as directed by the Engineer.

604.02 MATERIALS.

Crusher Run Aggregate CR-6	901.01
Aggregate	901.01, Size No. 57
Curing Materials	902.07

Form Release Compound	902.08
Concrete Mix No. 2	902.10
Concrete Mix No. 6	902.10
PVC Pipe	905
Reinforcement Steel	908
Preformed Joint Fillers	911.02
Borrow Excavation	916.01
Geotextile	921.09
Reflective Delineators	As approved by the Office of Traffic and Safety

All concrete traffic barriers, end transitions, and footers shall be constructed using concrete mix No. 6 unless otherwise specified in the Contract Documents. Before beginning work the Contractor shall construct a sample panel approximately 2 ft x 2 ft x 3 in. using the proposed concrete mix design. After 28 days, the concrete shall match Federal Standard No. 595, Color 37722 or lighter. The Contractor shall submit the panel and mix design to the Regional Engineer for approval. The approved sample panel shall remain at the construction site to be used by the Engineer to compare the color of the concrete barrier to the sample panel for adjustments and approval.

A sample panel for each source of supply shall be submitted for approval prior to use.

604.03 CONSTRUCTION. Concrete barriers shall be cast-in-place. Excavation for concrete barriers shall be made to the required depth and to a width that will permit the installation and bracing of forms where necessary. The Contractor shall remove all soft and unsuitable material and replace it with suitable material as directed by the Engineer. The subgrade shall be properly shaped and compacted in conformance with Section 208.

604.03.01 Concrete Barriers. Forming for the footer or concrete barrier may be either the fixed form or the slip-form method. Constructing the footer and the barrier section monolithically is prohibited.

- (a) **Fixed Form Method.** Forms shall be steel with a tolerance not to exceed 1/4 in. in 10 ft in either grade or alignment. For bifurcated and transition sections, other forming materials may be used as directed by the Engineer.

Before concrete is placed against the forms, they shall be thoroughly cleaned and coated with form release compound each time they are used.

Concrete mixing shall conform to 915.03.04 and placing to Section 420. Volumetric batching and continuous mixing will be permitted. Concrete shall be vibrated by means of an approved immersion type mechanical vibrator.

Construction or contraction joints shall be sawed or formed at 20 ft intervals with a minimum of 10 ft. The time of sawing shall be as specified in 520.03.14(c)(1). Expansion joints shall be placed where specified in the Contract Documents or as directed by the Engineer. All joints in footers and walls shall align.

Concrete finishing shall conform to 604.03.03 except that the surface shall be broom finished when forms are stripped in less than 24 hours. Face forms shall be removed for finishing as soon as the concrete can retain its shape.

All honeycombed and damaged areas shall be repaired immediately after the removal of the forms in a manner acceptable to the Engineer.

- (b) **Slip-form Method.** Slip-form equipment shall be approved by the Engineer and include the incorporation of automatic guidance controls to follow the line and grade references. On vertical and horizontal curves, an additional intermediate support shall be set in the field to establish a reference line acceptable to the Engineer. The use of ski or shoe sensors reflecting variations in the grade of the existing roadway surface is prohibited.

Concrete mixing shall conform to 915.03.04. The consistency of the concrete shall be so that after extrusion it shall maintain the shape of the barrier without support. Slip form equipment shall include internal vibrating capability. The surface shall be free of surface pits larger than 3/16 in. diameter. The concrete shall require no further finishing other than broomed finish.

Whenever a tear occurs during the operation of the slip-form equipment, it shall be repaired immediately or removed and replaced as directed by the Engineer.

Construction or contraction joints shall be sawed or formed at 20 ft intervals in the barrier and footer with a minimum of 10 ft, except in the area of miscellaneous structures 6 ft will be permitted. Sawed joints shall be a minimum of 2 in. deep and 1/8 in. wide. Expansion joints shall be as specified in the Contract Documents or as directed by the Engineer.

604.03.02 Curing. Concrete curing and protection shall conform to Section 420.

604.03.03 Finished Surface. Finishing concrete shall conform to Section 420. The completed barrier shall be within 1/4 in. in 10 ft from the horizontal and vertical lines specified in the Contract Documents or as approved by the Engineer. It shall present a smooth, uniform appearance.

604.03.04 Reflective Delineators. Reflective delineators shall be installed on the concrete traffic barrier as specified in the Contract Documents.

604.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for all concrete, test panels, excavation, removal of existing hot mix asphalt, disposal of excess or unsuitable material, concrete footer, forms, reinforcement, drilled holes, drainage appurtenances, geotextile, No. 57 aggregate, conduit, boxes and fittings, backfilling, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

The removal and disposal of unsuitable material will be measured and paid for at the Contract unit price for Class 2 Excavation, which price shall include the cost of using suitable excavation as replacement material. When Borrow or Selected Backfill is authorized as replacement material, payment will be made at the Contract unit price for the respective items.

Removal of existing concrete traffic barriers will not be measured unless specified elsewhere in the Contract Documents.

604.04.01 Concrete Traffic Barriers will be measured and paid for at the Contract unit price per linear foot. Measurement will be along the center line of the top of the barrier.

604.04.02 Concrete Traffic Barrier End Transitions will be measured and paid for at the Contract unit price per each.

604.04.03 Reflective Delineators will be measured and paid for at the Contract unit price per each.

SECTION 605 — METAL TRAFFIC BARRIERS

605.01 DESCRIPTION. This work shall consist of constructing metal traffic barriers as specified in the Contract Documents or as directed by the Engineer.